EXPLANATION OF SIGNIFICANT DIFFERENCES

I. INTRODUCTION

This document is a final Explanation of Significant Differences ("ESD") between the remedial action specified in the Record of Decision for the Sullivan's Ledge Superfund Site, Operable Unit I (the "OU-I ROD") and those now planned. This document also describes the conditions that justify these changes to the remedial action.

A. Site Name, Location

Site: Sullivan's Ledge Superfund Site -- Operable Unit I ("OU-I")

Site Location: New Bedford, Massachusetts

B. Lead and Support Agencies

Lead Agency: United States Environmental Protection Agency ("EPA")

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(617) 573-9665

Support Agency: Massachusetts Department of Environmental Protection ("MA DEP")

Contact: Jay Naparstek
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C. Citation of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA") Section that Requires the ESD

Pursuant to Section 117(c) of CERCLA, if any remedial or enforcement action is taken under Section 104, 106 or 120 of CERCLA after adoption of a final remedial action plan, and if such action differs in any significant respect (i.e., in scope, performance, or cost) from the final plan, EPA must publish an explanation of the significant differences and the reasons why such changes were made. The EPA Interim Final Guidance on Preparing Superfund Decision Documents (OSWER Directive 9355.3-02, June 1989) further provides that issuance of an ESD is appropriate when EPA determines that the need for changes to a remedial action is significant but does not fundamentally alter the overall remedy.

Because EPA has determined that the changes to the remedial action at OU-I outlined below create significant but not fundamental differences from the remedy prescribed by the OU-I

ROD, EPA is issuing this ESD to satisfy the requirements stated above.

D. Summary of Circumstances that Gave Rise to the Need for an ESD

Pre-design testing at OU-I revealed that the total volume of soil and debris that would require treatment is approximately two to four times greater than the OU-I ROD estimate. Additionally, the debris content of the soil is now estimated to be from 40 to 80 percent of the total volume requiring treatment, as opposed to the 33 percent amount assumed in the OU-I ROD.

The greater volume of soil to be treated in conjunction with an increased debris content will significantly increase the cost of and risks associated with the remedial action. The estimated capital cost of treating the larger volume of material (ranging from $6,600,000 for 46,000 cubic yards to $11,530,000 for 82,000 cubic yards) is between one and one half to almost three times higher than the cost identified in the OU-I Feasibility Study ($4,009,000 for 24,200 cubic yards). In addition, carrying out the remedial actions described in the OU-I ROD with the greater volume and greater debris content of the soil also could significantly increase potential risks by exposing individuals and the environment to dangerous dust and emissions. Thus, treatment of all of the soil identified in the Pre-Design Studies in accordance with the procedures described in the OU-I ROD creates a significant shift in the balancing of factors relating to the length of time, additional cost, and ability to implement and complete the remedy.

As the result of these considerations, EPA has determined that a component of the remedy proposed in the ROD should be significantly altered. In particular, EPA has determined that treatment will no longer be required for OU-I soil and sediments to be covered by the OU-I landfill cap. Further discussion of this change in the remedial component is provided in Section III.B.1., below.

EPA Interim Final Guidance on Preparing Superfund Decision Documents (OSWER Directive 9355.3-02) states that changes to a component of a remedy generally are incremental changes to the hazardous waste approach selected for the site (i.e., a change in timing, cost, or implementability). EPA has determined that the revisions to the remedy described in this ESD do not fundamentally alter the overall approach of the remedy but, rather, are incremental changes to a component of the remedy. Thus, consistent with the above-referenced guidance, it is

appropriate to make these types of changes to the OU-I ROD through this ESD, which describes the changes and explains the reasoning behind them.

E. Location and Times at Which the Administrative Record File is Available for Public Review

In accordance with Section 117(d) of CERCLA, this ESD will become part of the Administrative Record File, which is available for public review at the two locations listed below at the given times:

EPA Region I Records Center
90 Canal Street
Boston, Massachusetts 02203
(617) 573-5729
Monday-Friday: 10:00 a.m. - 1:00 p.m.
2:00 p.m. - 5:00 p.m.

Wilks Library
1911 Acushnet Avenue
New Bedford, Massachusetts 02745
(508) 991-6214
Monday, Wednesday: 9:00 a.m. - 9:00 p.m.
Tuesday, Thursday, Friday,
Saturday: 9:00 a.m. - 5:00 p.m.

II. SUMMARY OF SITE HISTORY, RESPONSE HISTORY, CONTAMINATION PROBLEMS, AND SELECTED REMEDY

A. Site History

The Sullivan's Ledge disposal area (the "Disposal Area") is a 12-acre parcel located in an urban area of the City of New Bedford in Bristol County in southeastern Massachusetts. The Disposal Area is bounded on the north by Hathaway Road, on the south by the Interstate 195/Route 140 Interchange and on the east and west by commercial development. The northeast corner of the Disposal Area and adjacent areas (the "floodplain section") are located in the 100-year floodplain of an unnamed stream (the "Unnamed Stream"). Immediately north of the Disposal Area, across Hathaway Road, is the Whaling City Golf Club (the "WCGC"), approximately 250 acres in size. Appendix A, Figure 1 shows a map of the floodplain section and Figure 2 is of the Site's two operable units (OU-I and OU-II).

The Disposal Area was formerly operated as a granite quarry. Four granite pits with estimated depths of up to 150 feet have been identified from field investigations. After quarrying operations ceased, the land was acquired by the City of New

Bedford. Between the 1930s and the 1970s, the quarry pits and adjacent areas on the Disposal Area were used for the disposal of hazardous materials and other industrial and solid wastes.

By way of the Unnamed Stream, which leads from the Disposal Area across the WCGC's land to water hazards on the WCGC's premises (the "Water Hazards"), contaminants have migrated from the Disposal Area to (i) the Unnamed Stream, (ii) the Water Hazards, and (iii) wetlands on the WCGC's land which straddle the Unnamed Stream (the "Middle Marsh Area") (these areas and adjacent areas of concern are referred to collectively herein as the "Site").

EPA has divided the Site into two operable units. Operable Unit 2 ("OU-II") is the Middle Marsh Area, while OU-I, which is the subject of this ESD, consists of the remaining areas of the Site. Both Operable Units are shown on Figure 1 of Appendix A. Remedial work on the two operable units is being conducted by potentially responsible parties ("PRPs") under separate consent decrees which provide for coordination of certain remedial activities.

B. Contamination Problems

EPA completed Phase I and Phase II Remedial Investigations at OU-I (the "RIs") in 1987 and 1989, respectively. The RIs revealed high concentrations of polychlorinated biphenyls ("PCBs") and polycyclic aromatic hydrocarbons ("PAHs") in surface and subsurface soil. High concentrations of PCBs were also found in sediments. The RIs also indicated the presence of volatile organic compounds ("VOCs") and inorganics in the groundwater.

Based on the RIs, the areas of contamination are (1) Disposal Area soil; (2) PCB-contaminated sediments that have washed off the Disposal Area into the Unnamed Stream, the Middle Marsh Area (OU-II), the Water Hazards and other adjacent wetland areas; and (3) wastes disposed of in the former quarry pits. In addition, groundwater in the overburden and bedrock is contaminated from wastes within the quarry pits.

C. Response History

Early in 1982, the Massachusetts Department of Public Works conducted tests at the Site in response to a proposal for construction of a commuter parking lot. Electrical capacitors were unearthed in the test borings. In 1982, EPA conducted an air monitoring program in the greater New Bedford area and installed groundwater monitoring wells around the Site in 1983. Based in part on the results of these studies, the Site

was included on the National Priorities List in September 1984.

In September 1984, EPA issued the owner of the Site, the City of New Bedford, an Administrative Order under Section 106 of CERCLA. In compliance with this Order, the City of New Bedford secured the Disposal Area by installing a perimeter fence and posting signs warning against unauthorized trespassing.

EPA completed the two RIs in September 1987 and January 1989. The Feasibility Study was also completed in January 1989.

On June 29, 1989, EPA issued the OU-I ROD, which included a final remedial action plan. On June 11, 1991, the U.S. District Court of Massachusetts entered a Consent Decree in United States v. Acushnet Co., et al., Civil Action No. 91-10706-K (the "OU-I Consent Decree"). The OU-I Consent Decree serves as the legally binding agreement between EPA, MA DEP and fourteen PRPs to perform remedial activities at the Site. Among other things, this Consent Decree requires the PRPs to conduct pre-design studies to further assess the extent of contamination (the "Pre-Design Studies").

Subsequent to the entry of the OU-I Consent Decree, the PRPs have conducted several studies to characterize further the extent of contamination at the Site. The PRPs are also required to design the remedial technologies that will contain and treat contaminants in the soil, sediments and groundwater, and conduct remedial action and operation and maintenance activities.

The June 29, 1989 ROD for OU-I also contains EPA's decision to divide the Site into two operable units. A decision on a remedial action at OU-II was deferred until further studies had been performed. After completion of studies and selection of a remedy, EPA issued a ROD for OU-II on September 27, 1991 (the OU-II ROD).

On April 23, 1993, the U.S. District Court of Massachusetts entered a Consent Decree in United States v. AVX Corporation, et al., Civil Action No. 93-10104-K, for the Middle Marsh Operable Unit (the OU-II Consent Decree). The OU-II Consent Decree serves as the legally binding agreement between EPA, MA DEP, and fifteen PRPs to perform remedial activities at OU-II. Fourteen of these PRPs share responsibility for the remediation of both operable units. The PRPs must perform the work for both operable units in accordance with the sequence of events described in the OU-II Consent Decree.

D. Summary of the Selected Remedy as Originally Described in the OU-I ROD

The selected remedy set forth in the OU-I ROD combines components of different source control alternatives and a management of migration alternative to obtain a comprehensive approach for remediation of all portions of OU-I. In summary, the originally selected remedy consisted of nine components:

1. Site preparation;

2. Excavation, solidification and disposal in the Disposal Area of contaminated soils from the Disposal Area (including the floodplain section);

3. Excavation, dewatering, solidification and disposal in the Disposal Area of contaminated sediments from the Unnamed Stream and the Water Hazards;

4. Construction of an impermeable cap over the Disposal Area, except for the floodplain section;

5. Diversion and lining of a portion of the Unnamed Stream;

6. Collection and treatment of contaminated groundwater;

7. Wetlands restoration/enhancement;

8. Long-term environmental monitoring; and

9. Institutional controls, including restrictions on groundwater use.

In addition, the selected remedial action for OU-II consists of the following components:

1. Site preparation;

2. Excavation of contaminated sediments and soils from portions of the Middle Marsh and adjacent wetlands;

3. Dewatering of the excavated materials;

4. Disposal of the materials beneath the cap that will be constructed over portions of the OU-I Disposal Area;

5. Restoration of the affected wetlands; and

6. Long-term environmental monitoring.

III. DESCRIPTION OF SIGNIFICANT DIFFERENCES AND THE BASIS FOR THESE DIFFERENCES

A. Summary of Information that Gives Rise to Significant Differences from the Selected Remedy as Specified in the OU-I ROD

The Pre-Design Studies have revealed that the total volume of soil and debris from the Disposal Area which exceeds cleanup standards and, therefore, will need to be excavated, separated and solidified is two to four times greater than the original estimate contained in the RIs. While the RIs estimated that 24,200 cubic yards of soil would require treatment, sampling results from the Pre-Design Studies now indicate that between 46,000 to 82,000 cubic yards of soil will require treatment.

Furthermore, the RIs did not directly assess the debris content of this soil but, rather, assumed a debris content of 33%. Debris content estimates obtained during the Pre-Design Studies (through test pit excavation and characterization) suggest a debris content of 40% to 80% of the revised total volume of soil.

In addition, the greater volume of soil to be treated in conjunction with an increased debris content will significantly increase the cost of the remedial action. The estimated capital cost of treating the larger volume of material (ranging from $6,600,000 for 46,000 cubic yards to $11,530,000 for 82,000 cubic yards) is between one and one half to almost three times higher than the cost identified in the OU-I Feasibility Study ($4,009,000 for 24,200 cubic yards).

B. Description of Significant Differences Between the Remedy as Presented in the ROD and the Action Now Proposed

1. Description of Differences

The remedy presented in the OU-I ROD called for the treatment of soil from the Disposal Area (including the floodplain section) (the "on-site" area), and soil and sediments from the Unnamed Stream, the Water Hazards and other areas in OU-I outside of the Disposal Area (the "off-site" areas) that

exceed cleanup standards.[1] Soil from the Disposal Area was to be excavated to the seasonal low water table, dewatered and solidified. All of the solidified soil and sediments were then to be buried underneath an impermeable cap extending over the entire Disposal Area except for the floodplain section of this area.

Under the revised remedy, soil in the Disposal Area outside of the floodplain section will not be excavated and, therefore, will remain untreated. That soil will remain in place and be covered by the cap. Consistent with the OU-I ROD, the cap will be constructed over the entire surface area of the Disposal Area, except for the floodplain section. Also consistent with the OU-I ROD, Disposal Area unsaturated soil in the floodplain that is contaminated above excavation cleanup standards (50 ppm PCBs and/or 30 ppm PAHs) will be excavated and disposed of beneath the landfill cap, outside of the floodplain. As described below, under the revised remedy, excavated soil from the floodplain shall also remain untreated.

In addition, as explained in this ESD, off-site soil and stream sediments that exceed solidification cleanup standards (soil - 50 ppm PCBs; sediments - 20 micrograms per gram of carbon) will not be treated. Instead, off-site soil and sediments that exceed excavation criteria (soil - 10 ppm PCBs; sediments - 20 micrograms per gram of carbon) shall be excavated and disposed of beneath the landfill cap, outside of the floodplain.

2. Rationale for Changes

If the remedy outlined in the OU-I ROD is not revised in light of new data concerning the volume and debris content of soil in the Disposal Area exceeding cleanup standards, the remedy will be significantly more costly, and will be more difficult and take longer to implement.

First, the high volume of soil and debris will substantially lengthen the duration of remedial activities at OU-I. The Feasibility Study estimated that excavation, dewatering and treatment of contaminated soil and sediments would be

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[1] The OU-I ROD refers to soil in the Disposal Area as "on-site" soil, and the Disposal Area, including the floodplain, as the "on-site" area. Soil and sediments in OU-I, but outside of the Disposal Area, are referred to as "off-site" soil and sediments. To be consistent with the OU-I ROD, this ESD will use the same references.

completed in approximately one construction season. In light of the new data, it is estimated that two to three construction seasons will be necessary if all of the soil is excavated, dewatered and solidified. Therefore, the overall impact on the time to complete the entire remedy would be extended from two to three construction seasons to three to five construction seasons.

The lengthier duration of excavation, dewatering and solidification activities could create environmental and public health problems, and could greatly increase the possibility that individuals and the neighboring environment could be exposed to fugitive, contaminated particulate and dust emissions. A longer remedial action period could also have other adverse impacts on the nearby community, including increased truck and other traffic which could create greater levels of noise and other nuisances for nearby property owners, and traffic safety problems that could potentially require costly traffic control measures.

In addition, the greater volume of soil to be treated in conjunction with an increased debris content would significantly increase the cost of the remedial action. The estimated capital cost of treating the larger volume of material (ranging from $6,600,000 for 46,000 cubic yards to $11,530,000 for 82,000 cubic yards) is between one and one half to almost three times higher than the cost identified in the OU-I Feasibility Study ($4,009,000 for 24,200 cubic yards).

For the reasons stated above, considerations concerning the treatment of Disposal Area soil identified in the Pre-Design Studies in accordance with the procedures described in the OU-I ROD create a significant shift in the balancing of factors relating to the length of time, additional cost and ability to implement and complete the remedy. EPA Interim Final Guidance on Preparing Superfund Decision Documents (OSWER Directive 9355.3) states that changes to a component of a remedy (i.e., a change in timing, cost or implementability) generally are incremental changes to the hazardous waste approach selected for the site. The revisions to the remedy described in this ESD do not fundamentally alter the overall approach of the remedy and are consistent with the above-referenced guidance.

Given the new information about the volume and debris content of the soil, the changes described in Section III.B.1., above, reduce the cost and risk of increased exposure to hazardous substances while remaining protective of human health, welfare and the environment. These changes also are consistent with the overall remedial approach in the OU-I ROD.

In addition, on-site soil located in the floodplain and off-site soil and stream sediments that exceed solidification cleanup standards will not be treated. However, such soil and sediments that exceed the applicable excavation criteria, as described in the Statement of Work, Section IV.A., will be excavated and disposed of on-site beneath the landfill cap, outside of the floodplain.

This determination is based upon several factors. First, the principal source of contamination at OU-I is the Disposal Area soil. For the reasons stated above, this soil will not require treatment. Through Pre-Design soil studies, it was determined that PCB contamination of off-site soil and sediments was significantly less than on-site soil contamination. Thus, any contribution to contamination by off-site soil and sediments will be minimal. The cap and engineering controls also will ensure that untreated soil and sediments will not present an unreasonable risk of injury to public health, welfare or the environment. Second, based upon Pre-Design solidification study results, both untreated on-site soil and off-site soil and sediments passed the Toxicity Characteristic Leaching Procedure Test and do not, therefore, constitute hazardous wastes. These considerations justify the decision to eliminate the treatment requirement for off-site OU-I soil.

3. The Revised Remedy Is Consistent with the Presumptive Remedy for CERCLA Municipal Landfill Sites

The Presumptive Remedy for CERCLA Municipal Landfill Sites (OSWER Directive 9355.0-49FS, September 1993) (the "Landfill Directive") establishes containment as the presumptive remedy for CERCLA municipal landfills. The Landfill Directive explains that, consistent with the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. § 300 et seq. ("NCP"), containment technologies are generally appropriate for municipal landfill waste because the volume and heterogeneity of the waste make treatment impracticable. More specifically, the NCP contains the expectation that engineering controls, such as containment, will be used for waste that poses a relatively low long-term threat or where treatment is impracticable because of the size and heterogeneity of the landfill contents. 40 C.F.R. § 300.430(a)(1)(iii)(B). The components of a presumptive remedy for a municipal landfill are a landfill cap, groundwater controls to contain the plume, leachate collection and treatment, landfill gas collection and treatment, and/or institutional controls to supplement engineering controls.

While the Landfill Directive is principally applicable to municipal landfills, the Disposal Area at OU-I was used for disposal of solid, hazardous and industrial wastes, rather than strictly municipal wastes. However, the Landfill Directive acknowledges that municipal landfills often contain a heterogeneous mixture of municipal, industrial and hazardous wastes. While wastes at OU-I may contain different types and proportions of waste than a typical municipal landfill, similar to a typical municipal landfill, OU-I contains a heterogenous mixture of wastes. Also, like debris at a typical municipal landfill, soil at the Disposal Area will pose a relatively low long-term threat when overlaid by the impermeable cap. Therefore, criteria set forth in the Landfill Directive are useful guiding principles regarding the OU-I Disposal Area.

The Landfill Directive sets out four criteria for evaluating whether conditions at a site make application of the presumptive remedy appropriate. The questions, and brief responses specific to OU-I, are as follows.

1. Does evidence exist to indicate the presence and approximate location of waste?

   No. Although tests clearly indicate the presence of PCB levels in the soil at the Disposal Area that exceed the soil cleanup standards established in Section IV of the OU-I Statement of Work, soil sampling data from the Pre-Design Studies indicate that the presence and location of contaminated soil is significantly more widespread vertically and horizontally in the Disposal Area than estimated in the OU-I ROD.

2. Is the hot spot known to be the principal waste threat?

   There is no definitive hot spot at the Disposal Area. Widespread soil contamination and bedrock aquifer contamination serve as the sources of contamination.

3. Is the waste in a discrete, accessible part of the landfill?

   No. Based on the Pre-Design Studies, contaminated soil is more widespread throughout the Disposal Area and is mixed

with a greater amount of debris than estimated in the OU-I ROD.

4. Is the hot spot known to be large enough so that its remediation will reduce the threat posed by the overall site but small enough so that it is reasonable to consider removal?

   There is no discrete hot spot. Soil contamination in the Disposal Area is widespread. In addition, the high percentage of debris found in the soil at the Disposal Area makes it impracticable to consider excavation and treatment.

The Landfill Directive indicates that if the answer to all four of these questions is yes, then characterization and/or treatment of hot spots is warranted. Because none of the four questions can be answered affirmatively for OU-I, the Landfill Directive indicates that attempts to identify and treat specific areas of soil contamination are not required. Rather, the response action should be modified in accordance with the presumptive remedy.

The revised remedy set forth in this ESD is generally consistent with the components of the presumptive remedy listed above. An impermeable cap will be installed over the Disposal Area except for the floodplain section. A passive groundwater collection system will be put in place to capture the plume of contaminated groundwater that discharges from the untreated soil, and a groundwater pump and treat extraction system will be implemented in the bedrock aquifer system. The institutional controls set out in the ROD will continue to be fully implemented under the revised remedy.

The only component of the presumptive remedy not currently part of the revised remedy for OU-I is the installation of a gas collection, venting and/or treatment system. EPA, in consultation with MA DEP, has determined that a soil gas field investigation shall be conducted to evaluate whether such a system at OU-I is warranted due to materials currently at the Disposal Area. In addition, EPA, in consultation with MA DEP, has determined that an evaluation shall be conducted to assess whether a gas collection, venting, and/or treatment system will be required to address gas generation that results from the degradation of organic materials placed under the cap from outside of the Disposal Area (i.e., soils, sediments, and vegetative matter). The evaluation should involve, but is not limited to, an estimation of the gas generation rate from, and the characteristics of, materials of this type and volume.

4. The Revised Remedy Continues to Comply with the Applicable or Relevant and Appropriate Requirements ("ARARs") for OU-I

OU-I soil and sediments are contaminated with both inorganic and organic compounds, including, among other things, PCBs and lead. Thus, these compounds potentially constitute PCB waste as defined under 40 C.F.R. § 761 and hazardous waste as defined under 40 C.F.R. § 261 et seq., and 310 C.M.R. § 30.00. Accordingly, the PCB disposal regulations and Land Disposal Regulations cited above are potential ARARs for the Site. A discussion of these two sets of ARARs and an assessment of their applicability to OU-I follows below.

a. PCB disposal requirements promulgated under the Toxic Substances Control Act ("TSCA")

The OU-I ROD deemed PCB storage and disposal requirements promulgated under TSCA as applicable to OU-I because of the presence of soil and sediments contaminated with PCBs in excess of 50 ppm. Under TSCA regulations, soil contaminated with PCBs may be disposed of by incineration or in a chemical waste landfill. 40 C.F.R. § 761.60(a)(4). Additionally, PCB wastes which require incineration may be disposed of by an alternate destruction technology that achieves an equivalent level of performance to incineration. 40 C.F.R. § 761.60(e).

In the OU-I ROD, EPA determined that the TSCA PCB storage and disposal requirements were applicable to OU-I. Specifically, the remedy will result in a chemical waste landfill subject to the TSCA regulations contained at 40 C.F.R. § 761.75. However, in the OU-I ROD, EPA also determined that waiver of several of the regulatory requirements pertaining to chemical waste landfills was justified. As explained in the EPA Guidance on Remedial Actions for Superfund Sites with PCB Contamination (OSWER Directive No. 9355.4-01, August 1990) (the "PCB Guidance") some requirements specified under TSCA may not always be appropriate for existing waste disposal sites like those addressed by CERCLA. The PCB Guidance states that when this case exists, the waiver of certain chemical waste landfill requirements may be appropriate. These requirements can be waived when it can be demonstrated that a waiver will not present an unreasonable risk of injury to health or the environment. 40 C.F.R. § 761.75(c)(4). In accordance with the PCB guidance, the ROD waived several chemical waste landfill requirements, including requirements that (i) chemical waste landfills be constructed only in certain low permeability clay conditions (40 C.F.R. § 761.75 (b)(1)); (ii) a synthetic membrane liner be used at the Site (40 C.F.R. § 761.75(b)(2)); and (iii) the bottom of the

landfill be 50 feet above the historic high water table (40 C.F.R. § 761.75(b)(3)).

After reviewing the TSCA PCB chemical waste landfill requirements in light of the new data concerning the volume and debris content of soil in the Disposal Area, EPA has determined that under the revised remedy set forth in this ESD, the requirements for chemical waste landfills can continue to be waived. Consistent with the OU-I ROD, with the exception of the floodplain, soil in the Disposal Area will not be excavated or treated. Under the revised remedy, excavated soil from the floodplain also will not be treated. Similarly, off-site soil that exceeds the cleanup standards will be excavated but will remain untreated. Although both off-site and on-site materials that exceed PCB solidification standards will remain untreated, EPA has determined that the revised remedy does not materially alter the basis for continuing to waive the above-cited TSCA requirements. For the reasons stated below, the revised remedy will not present an unreasonable risk of injury to human health, welfare or the environment.

The requirement of low permeability clay conditions for the underlying substrate is not necessary to prevent migration of PCBs located in soil, and the waiver of this requirement continues to be appropriate. When in soil, PCBs are relatively immobile because they bind to the organic portion of soil particles. As part of the revised remedy, soil that may become a source of migrating PCBs (i.e., soil in the floodplain section and off-site soils and sediments which exceed cleanup standards), will be excavated and placed under the cap to the extent necessary, based upon soil sampling results and validation of the data. The entire Disposal Area (except for the floodplain section) will be capped, thereby preventing PCBs from migrating into the groundwater by not allowing precipitation to infiltrate into the remaining untreated soil.

The waiver of the requirement that a synthetic membrane liner be used continues to be appropriate, due to a minimization of the hydraulic connection between PCB contaminated soils and the overburden groundwater. The justifications for continuing to waive this requirement are (i) the Disposal Area (except for the floodplain section) will be covered with an impermeable cap, thereby preventing infiltration of precipitation into the soil and inhibiting the recharge of the overburden groundwater; (ii) a passive groundwater collection trench will be located on the east side of the Disposal Area, collecting and treating groundwater from the contaminated soil layer; (iii) the Unnamed Stream will be lined to prevent any

hydraulic connection with the overburden groundwater; (iv) stormwater run-on controls will be implemented to prevent infiltration of precipitation from areas outside the Disposal Area; and (v) installation of an active groundwater collection system may further lower the groundwater level in the overburden.

The waiver of the hydrologic requirement that the landfill must be 50 feet above the historic high water table also continues to be appropriate. Even if contaminated soils come into contact with groundwater, the likelihood of PCB migration from the soil to the groundwater is minimal. For the majority of groundwater samples taken during several rounds of monitoring in recent Pre-Design Studies, low PCB concentrations have been found. In addition, EPA anticipates that the active groundwater treatment system also may further reduce any communication between PCBs and the groundwater.

Additionally, compliance with the three waived requirements is not necessary for geological reasons. Most groundwater flows under the Disposal Area from south to north, with a smaller amount flowing from west to east. Groundwater reaching the eastern side of the Disposal Area will be captured by the passive groundwater collection system. Therefore, there can be no groundwater migration from the Disposal Area in a westerly, southerly, or easterly direction. Furthermore, six deep bedrock extraction wells will be installed on the northern boundary of the Disposal Area. Although the purpose of these wells is to remove water from the bedrock for treatment, they may also draw water down out of the overburden. This action may remove any residual water that had infiltrated prior to construction of the cap and run on control measures, or that did not discharge into the passive collection system. Thus, any migration of PCBs will be effectively controlled and there will be little risk of contamination to nearby ground or surface waters.

It should also be noted that in the OU-I ROD, EPA waived compliance with certain ARARs relating to groundwater. The waiver covered both federal and state ARARs. Specifically, Maximum Contaminant Levels ("MCLs") promulgated under the Safe Drinking Water Act, Massachusetts Drinking Water Standards and Massachusetts Groundwater Quality Standards were waived. This waiver of groundwater ARARs continues to be appropriate. EPA determined that compliance with the requirements of these ARARs was technically impracticable from an engineering perspective. The determination of technical impracticability was based primarily on the nature of the wastes and contaminants within the quarry pits and bedrock fractures, and the geology of the Site. Consistent with the ROD, groundwater

will be treated to meet cleanup criteria that requires a significant reduction of contaminants in the bedrock aquifer.

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The factors discussed above ensure that there will be no unreasonable risk of injury to public health, welfare or the environment if certain TSCA requirements continue to be waived. Considering this information, the Regional Administrator continues to exercise the waiver authority contained in the TSCA regulations at 40 C.F.R. § 761.75(c)(4), and continues to waive the following requirements of the TSCA chemical waste landfill requirements: (i) that chemical waste landfills be constructed only in certain low permeability clay conditions (40 C.F.R. § 761.75(b)(1)); (ii) that a synthetic membrane liner be used at the Site (40 C.F.R. § 761.75(b)(2)); and (iii) that the bottom of the landfill be 50 feet above the historic high water table (40 C.F.R. § 761.75(b)(3)).

b. LDRs

The OU-I ROD stated that the Land Disposal Regulations were not applicable to OU-I. As explained below, EPA now finds that LDRs remain inapplicable to OU-I under the revised remedy set forth in this ESD.

LDRs are applicable to the disposal of soil or sediments contaminated with PCBs if the soil or sediments both (1) contain PCBs (or other halogenated organic compounds) in concentrations equal to or exceeding 1,000 ppm (40 C.F.R. § 268.32(e)(2)), and (2) constitute a hazardous waste, as defined in 40 C.F.R. § 261.20 et seq. and § 261.30 et seq. Additionally, disposal of the hazardous components of soil or sediments must take place subsequent to the effective date of the LDRs for the type of contamination found at the site. Resource Conservation and Recovery Act ("RCRA") ARARs: Focus on Closure Requirements (OSWER Directive 9234.2-04FS, October 1989).

Under the original remedy described in the OU-I ROD, the excavation, dewatering, solidification and placement of soil and sediments from the Disposal Area constituted disposal for the purpose of determining the applicability of LDRs. However, the OU-I ROD concluded that the soil and sediments in the Disposal Area (and elsewhere in OU-I) did not constitute a hazardous waste. To do so, the soil or sediments must either contain any of the materials listed in 40 C.F.R. § 261.30 et seq., or exhibit any of the characteristics listed and described in 40 C.F.R. § 261.20 et seq. Such characteristics include ignitability, corrosivity, reactivity and toxicity.

As stated in the OU-I ROD, EPA determined that none of the wastes in the soil and sediments at this operable unit are listed hazardous wastes under 40 C.F.R. § 261.30 et seq. because the specific processes creating the wastes are unknown. The mere presence of a hazardous constituent in a waste is not sufficient to consider the waste a Resource Conservation and Recovery Act ("RCRA") listed waste.

The only relevant characteristic listed in 40 C.F.R. § 261.20 et seq. is toxicity, a result of the presence of at least trace amounts of compounds such as lead. Some soil samples in the Disposal Area contain concentrations of lead exceeding the threshold level for that element, 5 mg/l, and, as a result, may constitute hazardous waste. 40 C.F.R. § 261.24. Nonetheless, at the time the ROD was issued, EPA expected that after solidification, the soils would no longer exhibit the toxicity characteristic and, therefore, would no longer constitute hazardous waste.[2]

LDRs continue to be inapplicable to the revised remedy set forth in this ESD. First, with the exception of soil in the floodplain, under the revised remedy, soil from the Disposal Area will not be excavated and dewatered, i.e., no disposal will occur. In the absence of a disposal, LDRs are not triggered. Second, to the same extent as required by the OU-I ROD, soil and sediments in the Unnamed Stream, the Water Hazards and the floodplain section will still be excavated, dewatered and placed beneath the cap. However, the floodplain soil and the off-site soil and sediments will not be solidified. Based on Pre-Design studies, floodplain soil and off-site soil and sediments that were representative of material that will be excavated did not exhibit the toxicity characteristic (i.e., this soil passed the Toxicity Characteristic Leaching Procedure Test) and will not constitute hazardous waste. Accordingly, the floodplain soil and off-site soil and sediments do not trigger the LDR ARAR.[3]

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[2] Furthermore, even if the toxicity characteristic of soil with high lead content in the Disposal Area was not removed by solidification, sampling conducted during the RIs indicated that these high-lead soil samples did not contain PCBs greater than 1,000 ppm.

[3] It also should be noted that during Pre-Design Studies, soils from the Disposal Area did not exhibit the toxicity characteristic (i.e., this soil passed the Toxicity Characteristic Leaching Procedure Test).

5. Ongoing Investigations/Further Remedial Activities

In addition to the components of the selected remedy described in Section II.D, above, and the significant changes to the original remedy described in Section III.B, above, where appropriate, as determined by EPA, in consultation with MA DEP, additional engineering control measures shall be implemented as part of the revised remedy. Briefly, these control measures are as follows:

- Use of geosynthetic materials such as geogrids in combination with compacted soils to support the landfill cap over settled areas.
- Use of mechanical methods such as proof rolling with heavy compactors. If necessary, EPA, in consultation with MA DEP, may require preloading or surcharging of the landfill by the temporary placement of soil to force settlement prior to cap installation.
- If necessary, possible modification of cap slopes to account for future settlement and proper site drainage.
- A gas collection, venting and/or treatment system, unless, based upon a review of the results of the soil gas field investigation and evaluation of materials from outside of the Disposal Area described in Section III.B.3, supra, EPA, in consultation with MA DEP, determines that the system is not necessary.

Further analysis of the need to apply these mitigative measures will occur during the remaining remedial design phase of the project. The appropriate additional engineering control measures will be implemented as necessary while the remedy is being constructed.

IV. SUPPORTING AGENCY COMMENTS

MA DEP has expressed its concurrence with the changes outlined in this ESD in its letter to EPA of March 31, 1995 which is attached to this ESD as Appendix B.

V. AFFIRMATION OF THE STATUTORY REQUIREMENTS

Considering the new information that has been developed and the changes described in this ESD that have been made to the selected remedy, EPA and MA DEP believe that the remedy remains protective of human health, welfare and the environment and is cost effective. The revised remedy complies with federal and state ARARS to the same extent as the ROD for OU-I. The basis for continuing to waive portions of ARARs in the OU-I ROD still remains valid. In addition, considering the issues addressed in this ESD, the revised remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, and satisfies the preference for treatment as a principal element to the maximum extent practicable for this Site.

VI. PUBLIC PARTICIPATION ACTIVITIES

Notice and information regarding these changes to the OU-I ROD has been disseminated by (1) a mailing to all parties on the Community Relations Mailing List and to all Potentially Responsible Parties and (2) publishing a notice of availability and a brief description of the ESD in the local newspaper, the New Bedford Standard Times. This notice described a 30 day public comment period, which began on April 4, 1995 and ended on May 4, 1995. A summary of comments received during the public comment period and EPA's responses to these comments (the "Responsiveness Summary") has been prepared. The ESD and Responsiveness Summary can be found in the Administrative Record File for this matter, which is available for public review. See Section I.E. of this ESD for the locations and times at which these documents are available for review.

July 26, 1995
Date of Issuance

By: Frank Ciavattieri for
Linda M. Murphy
Director, Waste Management Division

APPENDIX A

Reduced to 84%

Reference: FS/Vol. III/

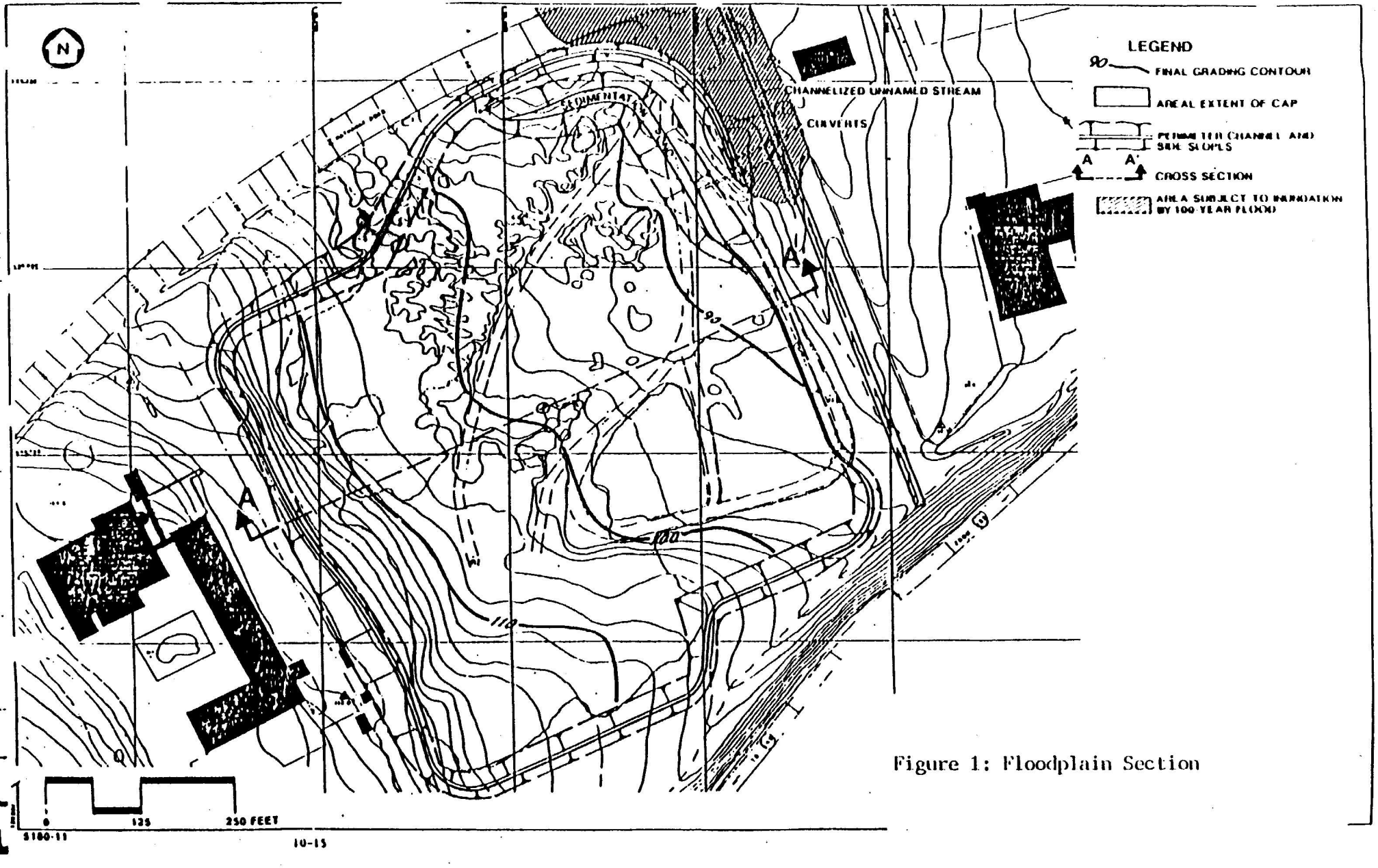

Figure 1: Floodplain Section

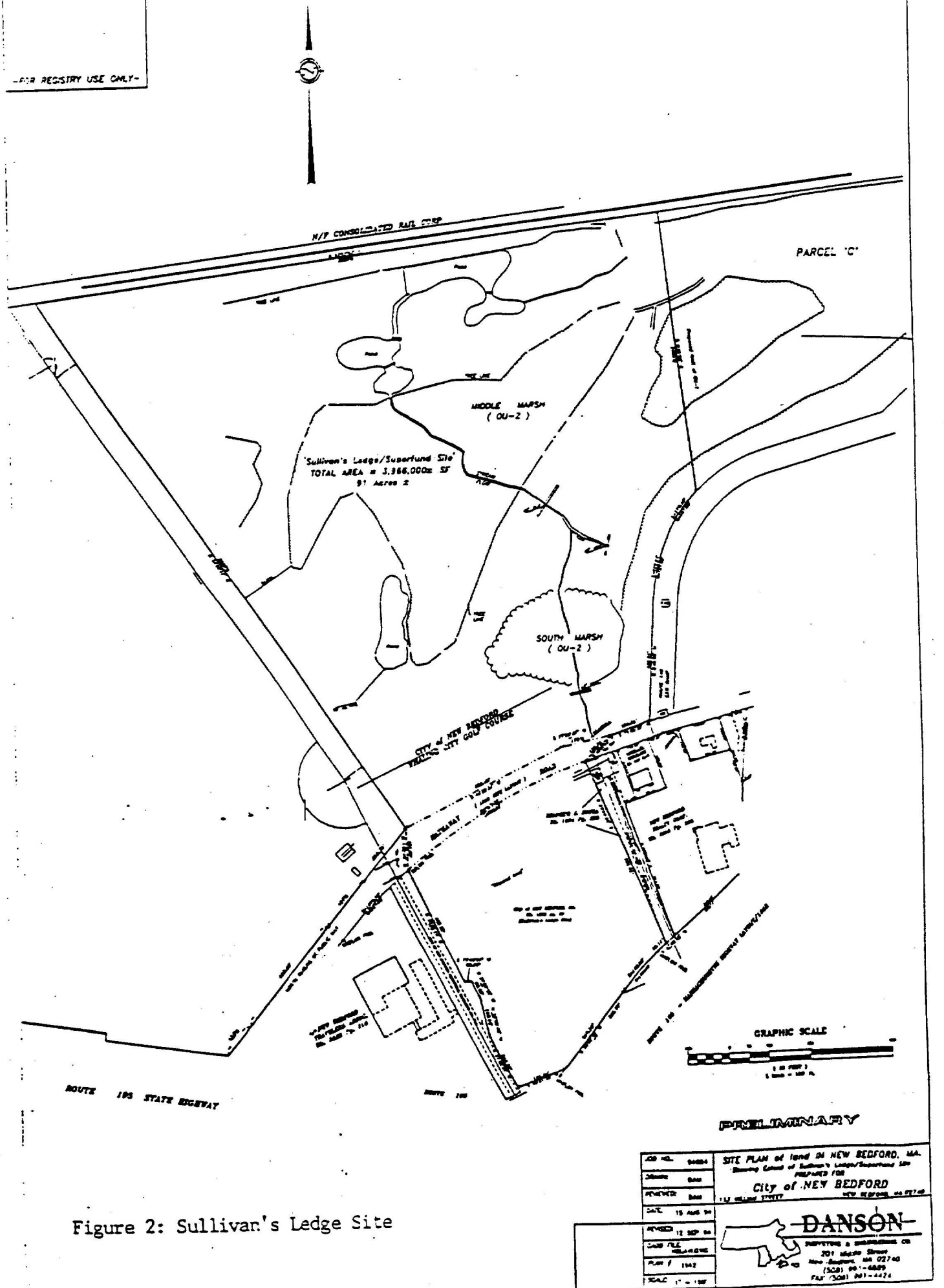

Figure 2: Sullivan's Ledge Site

APPENDIX B

Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Protection

William F. Weld
Governor
Trudy Coxe
Secretary, EOEA
Thomas B. Powers
Acting Commissioner

March 31, 1995

Frank Ciavattieri
U.S. EPA, New England
J.F. Kennedy Federal Building
Boston, MA 02203-2211

Re: DEP concurrence with ESD - First Operable Unit, Sullivan's Ledge Superfund Site (New Bedford, Massachusetts)

Dear Mr. Ciavattieri:

The Department of Environmental Protection ("DEP") has reviewed the draft Explanation of Significant Differences ("ESD") dated March 21, 1995 for the above referenced Site. DEP participated in the development of the ESD, and concurs with the substance and rationale for the remedy changes in the ESD. DEP believes that the proposed ESD will continue to ensure that the remedy meets all state ARARS, but will evaluate the remedy's compliance throughout the remedial design, implementation and operation phases.

In summary, the ESD eliminates the excavation requirement of the source area disposal pits due to excess debris content and an increase in impacts to public health caused by that excavation.

DEP's concurrence applies to the ESD as proposed by EPA in its draft dated March 21, 1995, which will then be subject a public comment period. Because public input is an integral component of DEP's evaluation of ESDs, DEP reserves the right to reevaluate its concurrence based on its appraisal of any public comments on the ESD, or in the event that EPA modifies the ESD in response to public comments.

DEP appreciates the opportunity to provide input on this ESD. If you have any comments on DEP's concurrence, please contact Charles Tuttle at (617) 292-5903.

Very truly yours,

Madeline Snow

Madeline Snow, Director,
Response and Remediation,
Bureau of Waste Site Cleanup

cc: George Crombie, Regional Director, DEP SERO
Andrea Papadopoulous, Deputy Director, DEP SERO
Don Nagle, OGC SERO
Charles Tuttle, BWSC Boston
Richard Lehan, OGC Boston

APPENDIX C

Responsiveness Summary to the Explanation of Significant Differences
July 1995
Sullivan's Ledge Superfund Site, Operable Unit I (OU-I)

Comment 1: "EPA deserves credit for recognizing that its earlier recommendation to solidify large quantities of excavated soils and sediments was not feasible in practice. The solidification plan was premised on a faulty estimate of the amount of materials needing treatment and the character of those materials. The original plan would have imposed unacceptable risks in terms of worker safety and public health. Because it would have required acquisition of additional land for dumpsites, the original plan might have prevented the City from making beneficial uses of the Whaling City Golf course across the road from the Ledge. It would have made siting of a groundwater treatment system very difficult and would have imposed great burdens on the commuting public by taking the local road effectively out of service for a period of years. Finally, the costs of implementing the original plan would have far outstripped any conceivable benefits."

Response: EPA's determination concerning the remedy at OU-I was based upon the data available at the time the Record of Decision (ROD) was signed. Revisions to the ROD in the Explanation of Significant Differences (ESD) are based upon pre-design data, which was collected and analyzed pursuant to the ROD (and was, therefore, unavailable before issuance of the ROD). The changes presented in the ESD present no change in the plan for the golf course property or in the siting of the groundwater treatment facility. In addition, there has never been, nor is there now, a plan to take Hathaway Road out of service for a period of years.

Comment 2: I realize that the amount of soils and sediments requiring treatment under the original ROD is significantly greater than was previously expected. I believe the decision of the EPA to forgo treatment of these soils and sediments is in the best interest of the City and all others involved, and is protective of human health and the environment. I am confident that EPA and other associated agencies will take all necessary measures to protect human health and safety.

Response: The decision to forgo solidification is based upon the increased volume estimate of soil and sediments to be treated and the large percentage of debris found during pre-design studies. These increased volumes may have significantly increased both the cost and the risks associated with the remedial action. The elimination of solidification as a component of the remedy does not affect EPA's determination that the capping of contaminated soil and sediments (with additional engineering controls, as appropriate) remains protective of human health and the environment.

Comment 3: The disposal area should be redeveloped as a unit packaging site to create jobs in the area.

Response: The City of New Bedford and other settling parties currently performing the Site cleanup are working cooperatively with outside parties to explore beneficial uses for OU-I once the disposal area is capped.

Comment 4: "The EPA has now determined that the treatment of...soils and sediments will NOT be a REQUIRED component of the remedy. This is NOT acceptable to the Hathaway Business Owners... How will this cap on a toxic waste dump...prevent contamination to future generations? The Hathaway Business Owners want to eliminate all contaminants from Sullivan's Ledge, thoroughly clean up the site, and assure future generations of business owners in this area that the Ledge will be a safe contaminant free site. We want the EPA to assure us that there will be some sort of plan for restoration of the site."

Response: Pre-design testing at OU-I revealed that the total volume of soil and debris that would require treatment is approximately two to four times greater than the OU-I ROD estimate. Additionally, the debris content of the soil is now estimated to be from 40 to 80 percent of the total volume requiring treatment, as opposed to the 33 percent amount assumed in the OU-I ROD. As a result, treatment and solidification of the soil and sediments would be significantly more costly and would be more difficult and take longer to implement than anticipated in the OU-I ROD. In addition, performance of the treatment component of the remedial action, as described in the OU-I ROD, also could significantly increase potential risks by exposing individuals and the environment to dangerous dust and emissions.

Moreover, OSWER Directive 9355.0-49FS entitled "The Presumptive Remedy for CERCLA Municipal Landfill Sites" (September 1993) (the "Landfill Directive") establishes containment as the presumptive remedy for CERCLA municipal landfills. The Landfill Directive explains that, consistent with the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. § 300 *et seq.* ("NCP"), containment technologies are generally appropriate for municipal landfill waste because the volume and heterogeneity of this waste make treatment impracticable. The NCP at 40 C.F.R. § 300.430(a)(1)(iii)(B) and the Landfill Directive also state that engineering controls, such as containment by capping, should be used for waste that poses a relatively low long-term threat or where treatment is impracticable because of the size and heterogeneity of the landfill contents.

Like a typical municipal landfill, OU-I contains a large volume and a heterogenous mixture of waste. Also, like a typical municipal landfill, contaminated soil and sediments in the Disposal Area will pose a relatively low long-term threat when overlaid by an impermeable cap.

As the result of these considerations, EPA has determined that treatment will no longer be required for OU-I soil and sediments to be covered by the OU-I landfill cap. Instead, the Agency has concluded that capping of the Site will be less expensive and more easily implemented, and will pose fewer risks to human health, welfare and the environment, while remaining protective.

Comment 5: The EPA should research the latest technology for eliminating PCBs and other contaminants from the soil and groundwater, including the ELI Eco Logic Inc. process.

Response: The information provided by the commentor concerns the Eco Logic process. This company has developed a gas-phase chemical reduction process along with a thermal desorption unit for the treatment of liquids and soils contaminated with polychlorinated biphenyls and other chlorinated compounds.

EPA's decision to eliminate the ROD requirement concerning the treatment of contaminated media at OU-I was based upon the increased volume of soil to be treated, as well as the high percentage of debris found in recent test pitting studies. The treatment of contaminants by any method, be it solidification or some other process, does not change the basis of the Agency's conclusion that treatment is more costly and may increase the potential risks associated with the remedial action. Moreover, capping (with additional engineering controls, as appropriate) remains protective of human health and the environment.

Moreover, the process developed by Eco Logic has undergone pilot scale and limited commercial scale testing. Despite the possible future application of this technology under the proper conditions (i.e., with proper waste characteristics, heterogeneity, and volumes), the successful application of this technology at the Sullivan's Ledge Site under current existing circumstances is extremely doubtful.